

# FLIGHT

*The*  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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## Flight

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## DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925	
Sept. 5	..... "Flight" Challenge Cup for Models at Sudbury.
Sept. 19-28	F.I.A. Conference at Prague.
Oct. 1	..... Maj.-Gen. Sir Sefton Brancker, K.C.B., A.F.C. "The Technical Lesson of Five Years of Air Transport," before R.Ae.S.
Oct. 8	..... Aero Golfing Soc. Autumn Meeting, Walton Heath.
Oct. 15	..... Maj. C. K. Cochran-Patrick, D.S.O., M.C. "Aircraft Survey in Burma," before R.Ae.S.
Oct. 24-29	Schneider Cup Race, Baltimore, U.S.A.
Oct. 29	..... Mr. W. L. Cowley. "Aircraft Transport Economy," before R.Ae.S.
Nov. 3	..... Sir Dugald Clerk, K.B.E., F.R.S., D.Sc., M.I.M.E., M.I.C.E., F.R.Ae.S. "Super-charging," before R.Ae.S.

## EDITORIAL COMMENT.



AUGUST 19, 1925, is likely to become a date of some importance in the history of British aviation, since it was on this date that the first flight was made, at the Stag Lane aerodrome, by one of the new light 'planes belonging to the London Aeroplane Club, which is the light 'plane section of the Royal Aero Club of Great Britain. As befitted the importance of the occasion, the official opening speech was made by the Under-Secretary of State for Air, who again emphasised the importance of developing in our race that "air sense" which it is so earnestly desired to foster. Just as in the past the British have always had a peculiar love of the sea, so must we now endeavour to become, as even highly placed officials express it, a nation of "airmen." That the newly-formed light 'plane clubs can and doubtless will endeavour to do a very great deal towards attaining that ideal is not to be doubted for one moment, and their coming into being must therefore be welcomed by all who take a really serious interest in the future of the British Empire—which future, as is now becoming increasingly realised, must of necessity be largely interconnected with the subject of air communications.

At the same time, we think a word of caution may not be out of place, and we trust we may be permitted to utter it without being accused of any intention of hampering the early and possibly somewhat faltering steps of the youngest offspring of the aviation movement. At the inauguration of the London Aeroplane Club's activities Lieut.-Col. Frank McClean very delicately, and for that reason perhaps not quite sufficiently clearly, pointed out that, although the light 'plane clubs were indebted to the Air Council for the financial support given, that support was no more than just sufficient to enable the clubs to carry on, *provided no serious crashes occurred*.

We have here a warning which should be taken to heart, and the fact that Col. McClean did not make much of it should not be allowed to obscure the fundamental importance of the situation. To anyone

with experience of aviation, and especially of flying tuition, it is obvious that crashes must be expected, nor is any good purpose served by trying to disguise the fact. We sincerely hope that the crashes may be negligible, and particularly that no personal injury may result, but if the clubs are sailing so close to the wind that one or two fairly substantial crashes are likely to imperil the existence of the clubs, then the matter is one of very serious importance, and either means will have to be found for increasing the reserve funds of the clubs or very stringent precautions taken for preventing, as far as is humanly possible, serious damage to the flying stock. Probably a combination of the two would be preferable.

This brings us to another point which deserves the closest attention by those responsible for the future development of the light 'plane movement. We are referring to the question of tuition. Major C. C. Turner, in a very closely reasoned article in the *Daily Telegraph* of August 24, calls attention to the need for carefully reviewing the methods of flying instruction at present in vogue, and, quite correctly, states that, although these methods cannot be said to have failed, it would be unwise to assume that they are necessarily the best possible. The problem is one requiring very great consideration, and the somewhat peculiar conditions under which the light 'plane club instruction will take place appear likely to demand rather different methods, and systems which have been found to work satisfactorily at ordinary flying schools will not necessarily apply without modification.

Major Turner incidentally refers to a fact well known to all familiar with the earlier flying schools, namely, that usually the first "solo" landing made by a pupil is successful, but that often the third solo landing is poor. This is a curious fact, but one frequently observed.

There is yet another aspect of the light 'plane club movement which may—we do not say it necessarily will—present certain difficulties, not so much at the outset as in a few months' time. We refer to the club member who has obtained his (or her) ticket. Up till now we have heard a good deal about the number of pilots that may be expected to be turned out by these light 'plane clubs, but let us face the facts as they are. We are quite prepared to believe that six clubs with two machines each will, during the next year or so, turn out quite a fair number of pilots capable of passing the Royal Aero Club tests. But when these club members have become certified aviators, what then? Unless they are afforded an opportunity to practice occasionally, so as to keep their hands in, they will quickly become "rusty," and not only so, but there

is a very considerable risk that they may become dissatisfied with the scant amount of flying which the relatively few machines will enable them to do. Unless, therefore, members of the light 'plane clubs are prepared to make not inconsiderable sacrifices during the first year or two of the club's existence, it seems possible that the movement may receive a somewhat serious set-back. At the flying schools at Hendon in pre-war days it used, we believe, to be the rule that there must be one machine for each ten or so pupils undergoing tuition. Such a proportion obviously cannot be maintained by the light 'plane clubs at the present stage, and a considerable increase in the flying stock of the clubs must be contemplated in the not too distant future, certainly by next spring. A statement from the Air Ministry as to what future support, if any, may be expected would be welcome.

We trust we shall not be misunderstood in this matter. Once more we emphasise the fact that we believe firmly and strongly in the ultimate success of the new light 'plane club movement, but we do think that the initial difficulties should thus early be realised, since the more fully they are appreciated, the more likely are they to be overcome.

Having devoted what may, we fear, be regarded by some as too much space to the less hopeful side of the question, let us turn to the other side of the picture. Here we find that with the fees decided upon for the London Aeroplane Club, for instance, it should be possible for a club member to learn to fly for a very low sum, provided he (or she) does not mind waiting for the opportunity. With a subscription fee of £3 3s., and an inclusive charge for use of machine at the rate of 30s. per hour, a pupil with any aptitude for flying should be able to secure his "ticket" for something like £20, or even less, which cannot be regarded as other than very reasonable.

Similarly, the man who has learnt to fly, and who wishes to practise occasionally, will be able to hire one of the club machines (provided one can be spared) for 30s. per hour. If he takes with him a passenger who is willing to share the expense, the cost becomes but 15s. per hour for each, and as in that period one of the "Moths" will cover a distance of, say, 80 miles, the cost per mile for each occupant will only work out at about 2½d. per mile, which is surely low enough in all conscience. And it should be remembered that this figure is an inclusive one, covering the cost of petrol, oil, insurance, etc. Looked at in this light the prospects are bright, and the main condition for unqualified success appears to be the acquisition by the clubs of a sufficient number of machines.

#### French Transatlantic Machine Tested

THE machine with which the French aviators Coli and Tarascon will shortly attempt a flight across the Atlantic, carried out successful tests recently at Villacoublay. It is a Potez type 25 biplane, similar to that used by Arrachard and Carol on their round-Europe flight, except that it is fitted with a 420 h.p. Bristol "Jupiter" engine.

#### Air Services for Cuba

It is proposed to start a series of air mail and passenger services between Havana and the principal towns in Cuba. The services will probably begin about November next, and Sen. Juan Zamora, Assistant Secretary of Communications, states that French and German firms are bidding for the contract.

#### Ruhr Flying Meeting

A THREE-DAY'S flying meeting at the Gelsenkirchen

aerodrome is being organised by the Aviation Society for the Essen district, in conjunction with various towns in the Ruhr area. The object of the meeting—which has been fixed for September 5, 6, 7—is, in addition to celebrating the freeing of the Ruhr, to further the interests of commercial aviation.

#### Munich-Frankfurt-London Air Service

On August 17 the first regular air service between Munich-Frankfurt-London was put into operation. Imperial Airways serve the London-Amsterdam section, the remaining section being operated by three-engined Junkers (Europa Union).

#### Egypt-India Air Route

AIR VICE-MARSHAL SIR SEFTON BRANCKER, Director of Civil Aviation, together with Col. Birchall and Lieut.-Col. Minchin, have left London in order to survey the proposed air route between Egypt and India.

# LONDON AEROPLANE CLUB INAUGURATION

## Light 'Plane Club Flying Commences at Stag Lane

THE London Aeroplane Club, formed by the Royal Aero Club in connection with the Air Ministry scheme for encouraging the formation of light 'plane clubs throughout the country, was officially declared open by Sir Philip Sassoon, Under-Secretary of State for Air, on August 19.

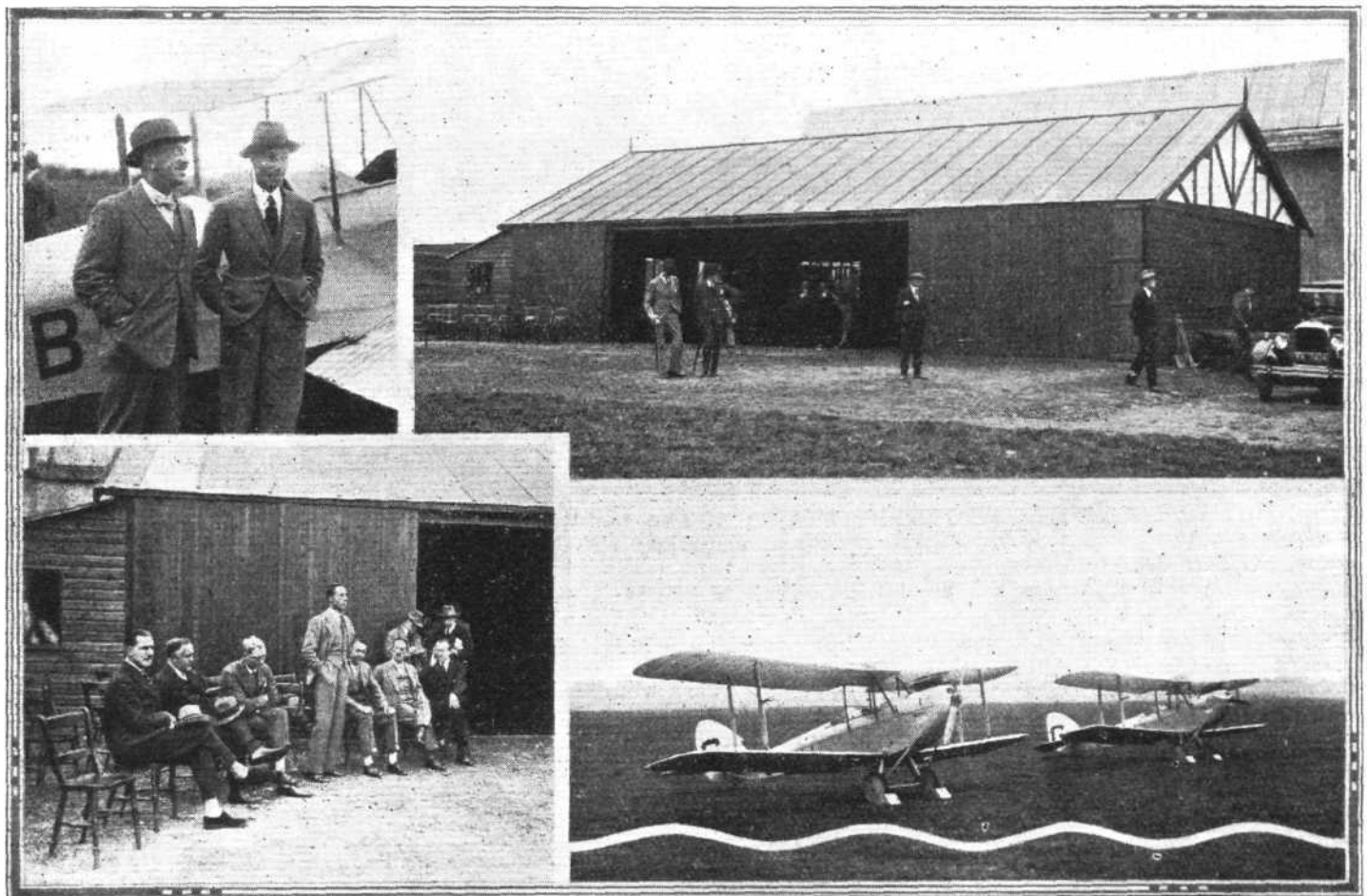
The club's headquarters have been established at the Stag Lane aerodrome of the De Havilland Aircraft Company, where a special hangar has been erected for the accommodation of the two D.H. "Moth" aeroplanes with which the club commences operations. Two instructors have been appointed with the approval of the Air Ministry, the chief instructor being Mr. F. G. M. Sparks, assisted by Mr. G. T. Witcombe.

In officially declaring the club open, Sir Philip Sassoon said the event was a matter for congratulation, as there had been many who doubted the feasibility of forming light 'plane clubs. He pointed out that a great many difficulties had

could do much towards realising that ideal. He wished to congratulate the club very heartily on its work, and hoped that their efforts, and those of the other light aeroplane clubs, would assist in weaning the aeroplane from its war-like associations, and developing it more as an agent for civilisation and peace.

The Duke of Sutherland sent a telegram regretting his inability to be present owing to his absence abroad, and added that he hoped, with Government support, the movement might become an important one for the development and popularising of aviation.

Lieut.-Col. McClean expressed the indebtedness of the club to the Air Council for their help, and said that though the amount of money which the Treasury had granted was scarcely large enough to make the clubs a big success, he thought that if there were no heavy expenses incurred, due



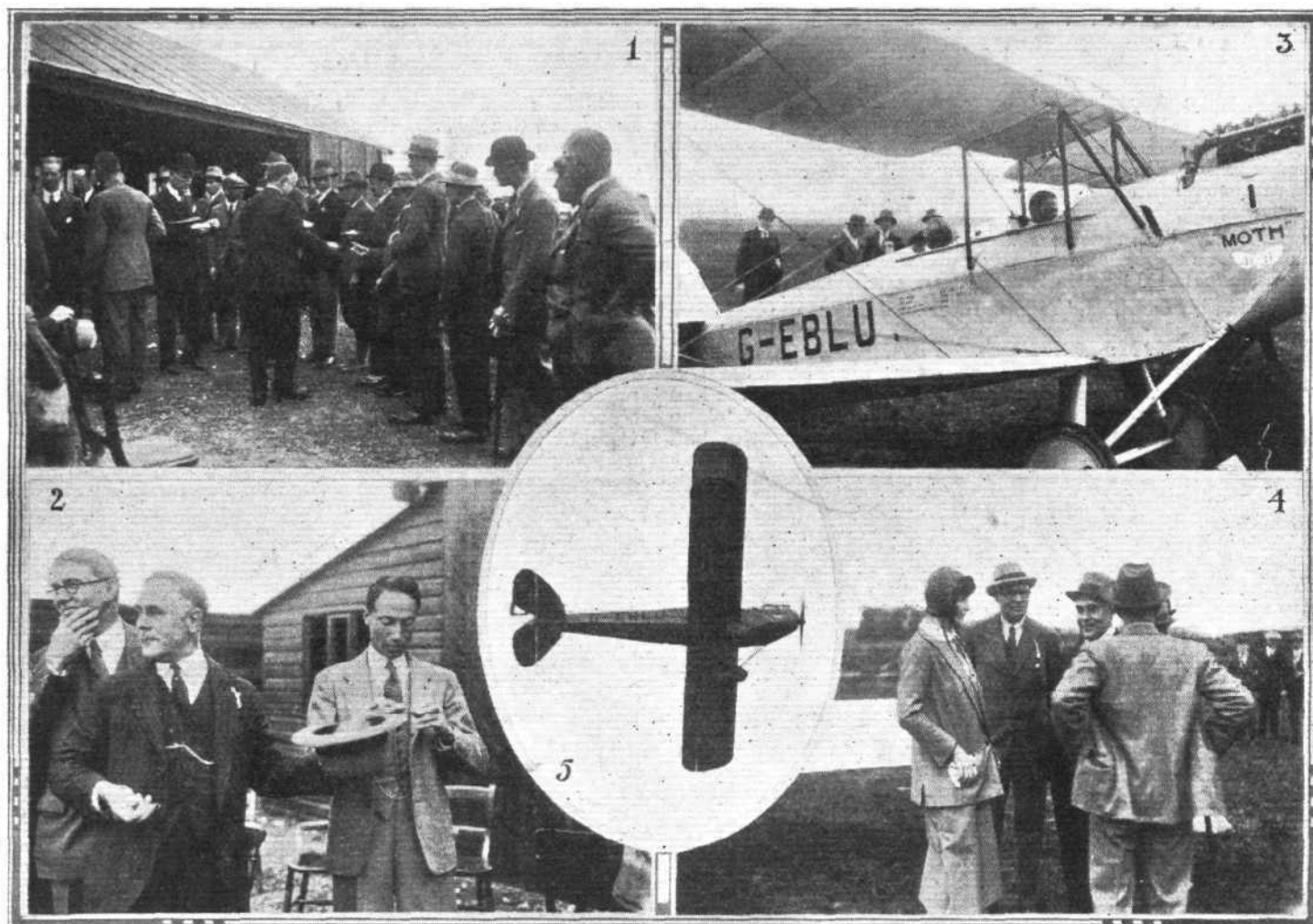
**OPENING OF LONDON AEROPLANE CLUB:** The two large photographs show the new hangar built for the club at the Stag Lane aerodrome, and the two de Havilland "Moths," with "Cirrus" engines which are owned by the club. On the left are Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation and Major Sir Philip Sassoon, Under-Secretary of State for Air, who is seen below, delivering the opening address. The members of the organising committee include, from left to right, Capt. C. B. Wilson, Commander H. Perrin, Col. F. McLean, Col. Mayo, Sir Sefton Brancker and Col. the Master of Sempill.

had to be overcome, but he was now able to congratulate the committee and the members on having gained for London the credit and distinction of being the first light aeroplane club in the country. He was convinced that many others would follow, and that before long they would see flying established as a popular sport.

Referring to the Air Ministry's share in the formation of the clubs, Sir Philip Sassoon said the clubs could be assured of Air Ministry sympathy and assistance within limits, and that, although the Air Ministry did not intend to carry these clubs on its back, everything that could be done would be done to help the clubs, because the Air Ministry realised that the clubs could help aviation by assisting the country to build up that big reserve of pilots which it needed. The clubs would, he thought, assist very materially in popularising flying and creating that "air sense" to which the Air Ministry looked forward so much. The ideal to be aimed at was to make Great Britain a "nation of airmen," and the clubs

to extensive repairs, the money allocated was probably just sufficient to enable the clubs to carry on till they could be firmly established. He referred to the fact that the officials of the clubs were either present or past pilots, who were prepared to do their best to make the Club a success. Their two flying instructors, Mr. Sparks and Mr. Witcombe, were men with many years of experience, and he felt sure that the Club's members would get every assistance from them.

The new Club having thus been duly opened, Sir Philip Sassoon was taken for a flight by Mr. Sparks in one of the Club's "Moths." He afterwards expressed himself delighted with the behaviour of the machine, and the comfort of the passenger's cockpit. The applications for flights from Club members were so numerous that it was necessary to hold a ballot, and fifteen names were drawn, it having been decided to limit the instruction on the opening day to half an hour per pupil. Mr. E. D. Kittel drew No. 1, and should thus have followed Sir Philip Sassoon, but he gave way in favour of the



**OPENING OF LONDON AEROPLANE CLUB:** 1. The ballot for instruction flights. 2. Sir Philip Sassoon opening a ballot paper. 3. Sir P. Sassoon about to make a flight in one of the "Moths," with Mr. Sparks as pilot. 4. The first member to be given a flight: Mrs. Elliott-Lynn relating her experience to Col. McClean, Commander Perrin and Sir Sefton Brancker. 5. One of the "Moths" in flight.

Club's first lady flying member, Mrs. Elliott-Lynn, to whom thus fell the honour of being the first Club member to receive actual flying instruction. The better part of the rest of the day was then devoted to flying instruction for the other fourteen members who had been lucky enough to share the day's programme.

Among those present were Air Vice-Marshal Sir Sefton

Brancker, Director of Civil Aviation, and Sir John Rhodes, who has joined the London Aeroplane Club as a flying member. The members of the Committee who supported Col. McClean at the opening included Col. the Master of Sempill, Capt. C. B. Wilson, Major R. H. Mayo, Wing-Commander T. O'B. Hubbard, and Lieut.-Comm. H. Perrin, who is Secretary of the London Aeroplane Club.

## THE YORKSHIRE AEROPLANE CLUB RECEIVES ITS "MOTH"

ON August 18 the Yorkshire Aeroplane Club took delivery of its first D.H. 60 "Moth" aeroplane. The machine, G-EBLS, left Stag Lane aerodrome at 10.45 a.m., piloted by Mr. R. W. Kenworthy and carrying Mr. I. F. Barnes, hon. secretary of the Yorkshire Aeroplane Club, as passenger. Shortly after 1 p.m. the "Moth" arrived at Leeds, having covered some 196 miles in a little over two hours.

A landing was made in the Soldiers' Field, Roundhay, Leeds, where a large gathering, including the Earl of Harewood, president of the Club, and Sir E. A. Brotherton, had assembled to welcome the Club's first machine. On its journey from

London the machine carried a letter from the Lord Mayor of London to the Mayor of Harrogate, but for some reason or other, permission to land at Harrogate was refused, and the letter was delivered from Leeds by road.

At present the Yorkshire Aeroplane Club has not got an aerodrome of its own—negotiations are now in progress with a view to acquiring a suitable site near Leeds—so the "Moth" is for the time being housed at the Blackburn Aeroplane works at Roundhay. Later it will be taken to Brough Aerodrome, where instructional flights will be made until the club aerodrome is provided.

### New Italian Air Attache

GENERAL ALESSANDRO GUIDONI has replaced Capt. Scaroni as Air Attaché to the Italian Embassy in London. Capt. Scaroni has, we understand, been transferred to the Italian Embassy in Washington, and will be greatly missed by all with whom he came in contact during his stay in London.

General Guidoni has had a very distinguished career in Italian aviation, and, incidentally, he is one of the pioneers of flying, having been actively engaged in aviation since the very earliest days. Until his appointment to the United Kingdom General Guidoni was head of the Italian government aircraft establishment, and has thus had practical experience of aircraft work in its various branches. We feel sure that General Guidoni will quickly become popular both with the

service side and with the industrial side of British aviation. Communications to General Guidoni should be addressed to him at the Italian Embassy, 28, Norfolk Street, Park Lane London, W. 1.

### Villacoublay-Angora Flight

CAPT. WEISS, accompanied by Serg.-Maj. van Caudenberg, who left Villacoublay on August 14 for Angora, arrived there safely on August 20.

### Fokkers for Roumania

THE Roumanian Government has just taken delivery of 50 Fokker aeroplanes, which were ordered by the Government from Holland some time back.

# AVIATION AND IMPERIAL DEFENCE\*

## The Air Minister's Visit to the Middle East

In a very informal and lucid manner the Secretary of State for Air, Sir Samuel Hoare, presents a well-written commentary of his visit, during the Easter recess, to Palestine, Trans-Jordan and Iraq. It merely deals with the less official aspects of the journey, and for the general reader this will probably prove something of a boon, allowing him as it does to see the situation in a very practical light and exactly as the Air Secretary found it.

Several amusing stories, together with some fine word pictures of the countries traversed, and the habits and customs of Abyssinians, Kurds, Arabs, etc., accompanied by some excellent illustrations, all combine to make this book readable and interesting. Certainly, no one could possibly describe it as dull. The impressions recorded by the Secretary of State for Air of the varied services carried out by the many Christian communities in Jerusalem will be eagerly devoured, dealing as he does with name-places known in every household.

The Vote for the Middle East will again come before Parliament, and all questions of policy and finance will be more easily followed by those who take the opportunity of following Sir Samuel's notes on the situation. Controversy will, undoubtedly, wax warm regarding the belief of the Colonial Office that Britain should continue to police desert wastes for ever. Be that as it may, the Air Secretary states that the big problem confronting the Governments of 1922-23 was how, having accepted the mandates, "we could with the least possible delay, and the greatest economy, develop the countries entrusted to our care." In 1921, the Chancellor

\* "A Flying Visit to the Middle East." By the Rt. Hon. Sir Samuel Hoare, Bart., C.M.G., M.P., Secretary of State for Air. Cambridge Univ. Press, 3s. 6d.

of the Exchequer was faced with the huge expenditure of £27,000,000 upon 50 to 60 Imperial units in Iraq and, realising the fitness of the country for air operations, the responsibility was transferred from the War Office to the Air Ministry, and from a G.O.C. to an Air Officer Commanding. The Air Force was thus given the opportunity of applying its own methods, in its own way, to a rather peculiar, even unique, situation. The responsibility of a great and difficult command of this kind, with its numerous attendant duties, fell upon the Air Force on October 1, 1922.

Efficiency, under no circumstances, must be impaired, whilst large economies were to be effected, and, following the Cairo Conference, a spectacular reduction in Army units, which numbered 92, in 1920, brought the number down to 12, whilst the Air Force squadrons rose from four to eight; and a peak expenditure of £38,500,000, occasioned in the 1920 rebellion, came down to £7,500,000 in 1922, since when further reductions have been made, on the whole effecting a saving in expenditure of, from the £38,000,000 in 1920, to less than £4,000,000 today.

The real point here is, as the Air Secretary records, that the new functions allotted to the Air Force were efficiently carried out, at a greatly reduced expenditure to the State, and the Air Force in this instance proved itself peculiarly adaptable to the situation. Without unduly praising the Air Ministry, the Air Force or personnel, the concrete facts of the amount of difficult work done in restoring order and maintaining peace with efficiency and economy in lives and money must, in large measure, be placed to the credit of the eight Air Force squadrons under the Air Command of the Middle East.

### Tokyo-London Flight

THE two Japanese aviators, Maj. Abe and Mr. Kawachi, who are flying from Tokyo to London on two Breguet biplanes, are making progress. Proceeding from Chita, they reached Irkutsk (Siberia) on August 8. On August 23 they arrived at Moscow, accompanied by ten Russian aeroplanes. They were given an enthusiastic reception, and among those present to welcome them were Litvinoff and the Japanese Ambassador.

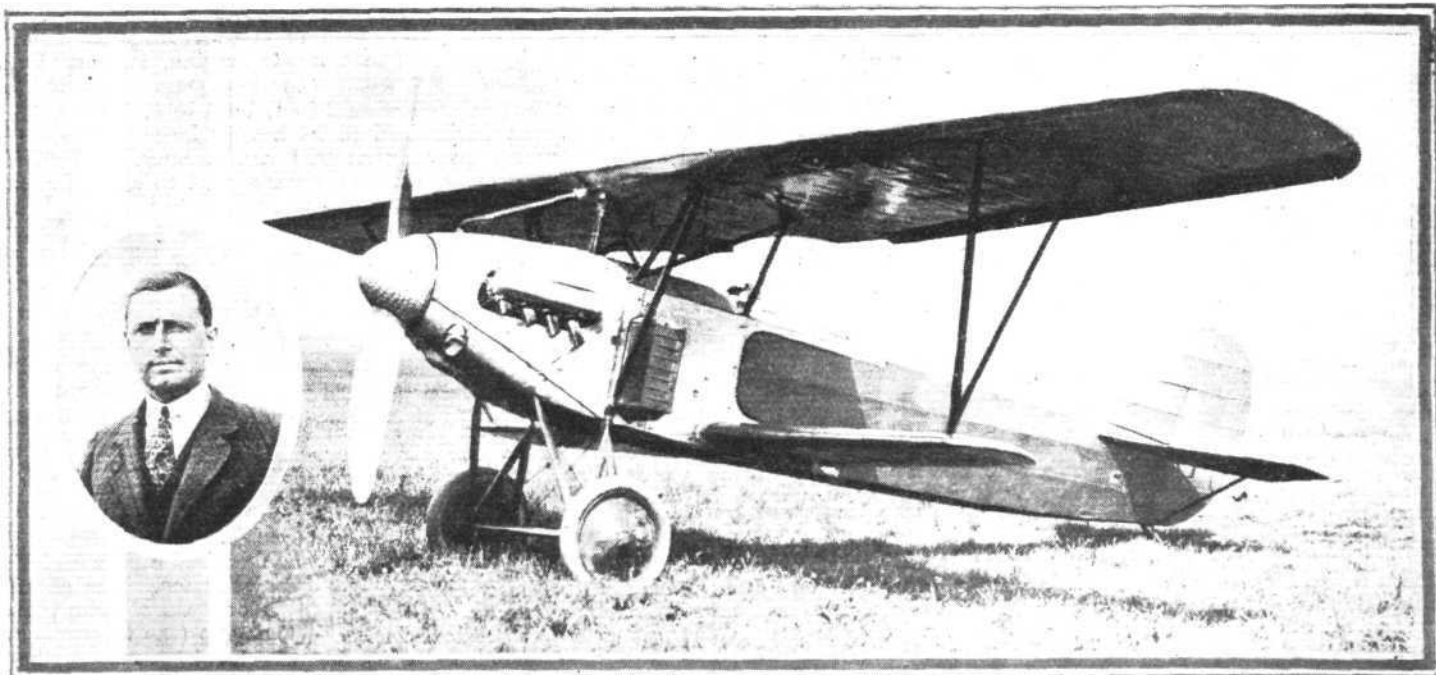
### New Hawker Director

THE board of directors of the H. G. Hawker Engineering Co., Ltd., of Kingston, has recently received a very valuable addition in the person of Mr. F. S. Spriggs, secretary of the

firm. Mr. Spriggs brings to bear on the many problems confronting an aircraft firm a considerable business experience and great energy, as well as very considerable personal charm, and his previous work with the firm is now receiving deserved recognition. With Mr. T. O. M. Sopwith, Mr. F. Sigris and Mr. Spriggs at the head of affairs the Hawker company should have a very bright future.

### Sadi Goes to Morocco

SADI LECOINTE, the famous French racing pilot, has volunteered for service with the French air forces in Morocco, and recently he, with a number of other aviators, including the Americans who have joined the French forces, were received in audience by the Sultan of Morocco.



**A FOKKER RECORD-BREAKER:** The Fokker D.XIII has recently established four new world's records. Carrying a useful load of 500 kgs. (1,100 lbs.) the machine attained an average speed of 165.7 m.p.h., while with the same load and over a distance of 200 km., the average speed was 164.7 m.p.h. These speeds are stated also to be world's records for a machine carrying 250 kg. (550 lbs.) useful load. The pilot was Engineer Grase (inset), the Fokker chief test pilot. Great Britain's share in the records was provided by the Napier "Lion" engine, and it is interesting to note that both machine and engine were standard productions in every way.

# THE WORLD'S DURATION RECORD

## Some Further Details Concerning the Wonderful Farman Performance

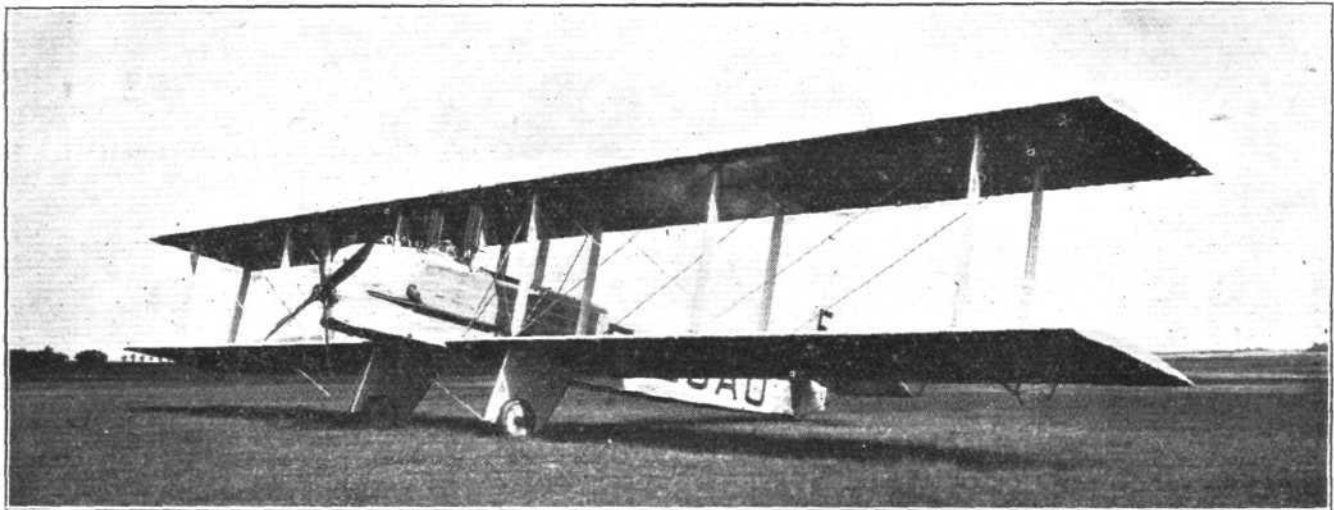
BRIEF reference was made in *FLIGHT* recently to the new world's record for duration and distance, established by the French pilots, Drouhin and Landry, on a Farman machine with Farman engine; the time in the air being 45 hours 12 mins., and the distance covered over a closed circuit being 4,400 kms. Some further particulars have now come to hand, which may prove of interest.

The machine used was a Farman biplane of the "Goliath" type, but fitted, in place of the usual two engines on the wings, with a single Farman engine of 500 h.p., mounted in the nose of the fuselage. Some idea of what is involved in a flight of this duration may be formed when we point out that the machine, which might justifiably be described as a flying

At the start the engine was running at 1,750 r.p.m. and developing 450 h.p. As time went on and the petrol was consumed, the engine was gradually throttled back to 1,580, 1,550, 1,500, 1,480, 1,450, and 1,300 r.p.m., the latter engine speed corresponding to the 180 h.p. just before the machine alighted.

After the flight the engine was taken down and examined by the *Section Technique*, whose officials expressed the following opinion: "All parts have been properly lubricated and have worked satisfactorily. All are in good condition, and the engine appeared capable of starting on a second endurance test in flight."

The 500 h.p. Farman engine, of the "W" or "broad-arrow" type,



**HOLDER OF THE WORLD'S DURATION RECORD:** The Farman F.62, on which recently, Drouhin and Landry established a new world's record by flying for 45 hours 12 mins. without landing, covering in that time a distance of 4,400 km. (2,740 miles), which is also a record. The engine fitted is a 12-cylinder Farman of the "W" or "Broad Arrow" type.

tank, carried at the start no less than 4,200 litres (925 gals.) of petrol, weighing 2,880 kgs. (6,340 lbs.). The total weight of the machine at the start of the flight was 6,500 kgs. (14,300 lbs.), and as the wing area of the machine is 170 sq. m. (1,830 sq. ft.), the wing loading at the beginning was 7.82 lbs./sq. ft.; while the power loading, on a basis of 450 h.p. maximum, was 31.75 lbs./h.p. at the start. In spite of this very heavy loading, the machine got away very well. At the end of the flight there remained in the tanks 162 kgs. (357 lbs.) of petrol, and, as the power then being taken from the engine was only 180 h.p., it is assumed that the flight could have been continued for another four hours.

type, develops a maximum of 540 h.p. at 2,200 r.p.m., and is similar to the one used in the 1924 attempt, when the Farman established a world's duration record of 38 hours. The weight of the engine, complete with all accessories, is 560 kgs. (1,233 lbs.), and it is stated to consume on an average 220 grs. (0.484 lbs. per h.p./h.). The Farman engine, it may be remembered, can be fitted with reduction gears of various ratios; those standardised being 2 to 1, 1.84 to 1, 1.67 to 1, and 1.5 to 1. In the record flight a very large Chauviere propeller was used, running at 900 r.p.m. only, and the propeller efficiency must have been very good to enable the machine to take off at all with the heavy loading.



### Melbourne-Tokyo Flight

DURING the past week Major the Marquis de Pinedo has been making comparatively slow progress in his flight to Tokyo. After being delayed at Amboyna by bad weather, he proceeded to Menado (Celebes Island), thence to Mindano Island and Cebu, in the Philippines. At Cebu he damaged his Savoia S.16 ter. flying boat, in a collision with a packet boat, whilst landing. He was able to proceed, however, on August 23, *en route* for Manila, but heavy squalls compelled him to land at Atimonan, Tayabas.

### Amundsen's Next Polar Flight

CAPT. AMUNDSEN, accompanied by R  ser Larsen, has gone to Italy with the object of negotiating for the purchase of an airship for next year's flight to the Pole.

### A.D.C. Aircraft

DURING the six years of its existence the Aircraft Disposal Co., Ltd., of Kingsway and Waddon, Croydon, has made its name known throughout the world, and has, we think, assisted in no small way to maintain in foreign parts the high reputation of British aircraft material. Readers of *FLIGHT*

will be interested to learn that this name has now been slightly modified. For the future this firm will be known as "A.D.C. Aircraft, Ltd." This change of name has been found desirable owing to the fact that they are now designers and manufacturers of aircraft and engines, in addition to their world-wide business of supplying engines, aircraft, spares, etc., from their stocks. It will be recalled that some time ago the firm took over the famous Martinsyde concern, and Mr. Kenworthy, the A.D.C. aeroplane designer, recently effected highly successful modifications in the Martinsyde F.4 type, resulting in the A.D.C. 1 machine (420 h.p. Siddeley "Jaguar") possessing a remarkable performance. The chief engine designer for A.D.C. Aircraft is Major Halford, who was one of the designers of the "B.H.P." engine (the forerunner of the world-famous "Puma"), and who has been responsible for the design of the A.D.C. 27-60 h.p. "Cirrus" and 140-h.p. "Airdisco" engines, which are meeting with such success. The A.D.C. works at Waddon are equipped with the most modern machinery, and the work produced there is of the highest standard—their system of inspection being organised on the lines laid down by the Aeronautical Inspection Dept. of the Air Ministry, whose full approval it has received.

# LIGHT 'PLANE AND GLIDER NOTES

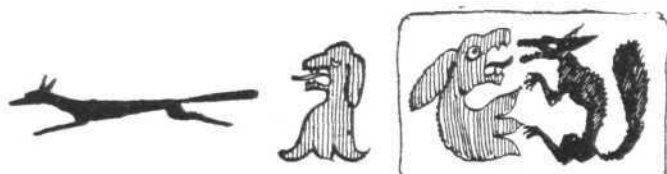
HARKING back to the August Meeting at Lympe a notable feature was the success of amateur-built light 'planes, which were, of course, in direct competition with machines produced by our various aircraft firms. Thus the "Hurricane" of the Royal Aircraft Establishment Aero Club secured first place in the final of the Light 'Plane Holiday Handicap, won the Grosvenor Challenge Cup Handicap Race, and also the



**AFTER THE RAIN AT LYMPNE:** A well-known pilot, who will doubtless be recognised, is interested in the condition of his propeller.

Private Owners' Race. In previous Lympe competitions the "Hurricane" had not done particularly well, and there were those who were inclined to scoff, some saying that there was "too much cane and not enough hurry" about the machine. The August meeting proved that the fitting of a Bristol "Cherub" engine had at last given the machine a chance to show what it could do, and the Farnborough Club were to some extent recompensed for their initiative.

THE Cranwell monoplane designed and flown by Flt.-Lieut. N. Comper was another amateur machine which acquitted itself extremely well. Its designer had visualised for this year an opportunity to do some good with a speed machine, and he was found to be right in his guess. Among the "firsts" which fell to the C.L.A. 3 were the International Single-Seater Light 'Plane Scratch Speed Race, and Greatest Speed over 3 km. (at an average speed of 139.89 km./h., or 86.92 m.p.h.). Actually on the day when the speed test was carried out there was a considerable wind blowing across the course, so that the real top speed of the Cranwell must be considerably



**TWO QUEER AVIATION PETS AT LYMPNE:** In the daytime the heraldic emblems in the racing colours of Lord Edward Grosvenor and Capt. Wilson appeared to be on the best of terms, but our artist suspects that at night, after the hangars were closed, it might be a different story.

higher. Probably by the time Comper has had time to "clean up" the machine he will not be very far short of the 100 m.p.h. which he set himself as his goal.

ANOTHER highly creditable amateur effort, although not, unfortunately, attended by much success, and not using an amateur-built machine, was the entering and flying of the D.H. 53 G-EBHZ by "The Seven Light Aeroplane Club, Eastchurch." This club is composed of seven members (at present), and purchased from stock the little de Havilland monoplane without engine. Three of the members of the club, Fly.-Ofr. Boyes, Flt.-Lieut. Ritchie, and Flt.-Lieut. Perry-Keene, set to work to overhaul the machine, and a very good job they made of it. An A.B.C. "Scorpion" engine was secured, but by this time funds were exhausted and for a time

it looked as if it would be impossible to bring the machine to Lympe and fly it in the various races. Fortunately, Lord Edward Grosvenor came to the rescue, and one can only regret that fortune did not favour the efforts of the Club. It is known that getting the machine and engine together and overhauling them meant a very great sacrifice on the part of the active members, who had to deny themselves every single little luxury in order to be able to carry on, and we hope that if any well-to-do reader of FLIGHT happens to see these notes, and is anxious to render assistance to the light 'plane movement he will not overlook the efforts of the "Seven Light Aeroplane Club, Eastchurch."

ONE of the disappointments of the meeting was the behaviour of the Pander light monoplane. This machine had previously performed extremely well on a visit to Croydon, and all who had seen it there were agreed that at Lympe the machine



**3 h.p. VERSUS 30 b.h.p.:** When Squadron-Leader Haig and his fair passenger had to make a forced landing in a field during a rainstorm they were the subject of considerable curiosity, and caused not a little consternation among the "local inhabitants."

never was given a fair chance, its engine obviously not developing anything like the power it should have given. Personally, we should like to see the Pander fitted with a Bristol "Cherub" when its performance would, we feel sure, be vastly different.

THE German competition for the Lilienthal Prize is now concluded, and in Class A (light 'planes) the Daimler L.20 has carried off most of the honours. The L.20, it may be, remembered, also took part with success in the *Rundflug* and the same type, fitted with Mercedes-Daimler engine of 19 h.p., has secured first place for greatest speed, lowest speed, best rate of climb, ceiling, shortest take-off, shortest pull-up, smallest fuel consumption, and greatest useful load. In other words, the Daimler L.20 has "swept the board."



The Most Popular Stand at Lympe.

THE Akademische Fliegergruppe, Darmstadt, have been awarded a number of consolation prizes for the performance put up by the little "Mohamed" monoplane fitted with British Blackburne engine, and it is of interest to note that no other German light 'plane appears to have won any prizes at all in the competition.

# THE PROGRESS OF AERONAUTICS

## Fifth Annual Report of Aeronautical Research Committee

THE Report of the Aeronautical Research Committee for the year 1924-1925 has just been published and contains a great deal of interesting matter. It is pointed out that at the end of the financial year a reconstitution of the Committee took place, the new terms of reference being as follows:—

"(1) To advise the Secretary of State on scientific problems relating to aeronautics. (2) To make from time to time recommendations to the Air Council as to any researches which the Committee consider it desirable to initiate, and as to any matters referred to them by the Council. (3) To supervise the aeronautical researches at the National Physical Laboratory initiated by them, and, if requested to do so by the Air Council, any other researches connected with Aeronautics. (4) To make an annual report to the Air Council of the research work which the Committee consider should be undertaken at the National Physical Laboratory, or elsewhere, together with an estimate of expenditure at the National Physical Laboratory. (5) To investigate the causes of such accidents as may be referred to them by the Air Council, and to make recommendations as to the prevention of accidents in the future. (6) To promote education in aeronautics by co-operating with the Governors of the Imperial College and in any other way within their power. (7) To assist with advice any research carried out by or on behalf of the Aeronautical Industry, and to make available any information of value to the Industry so far as is compatible with public interests. (8) To make an annual report to the Secretary of State for Air."

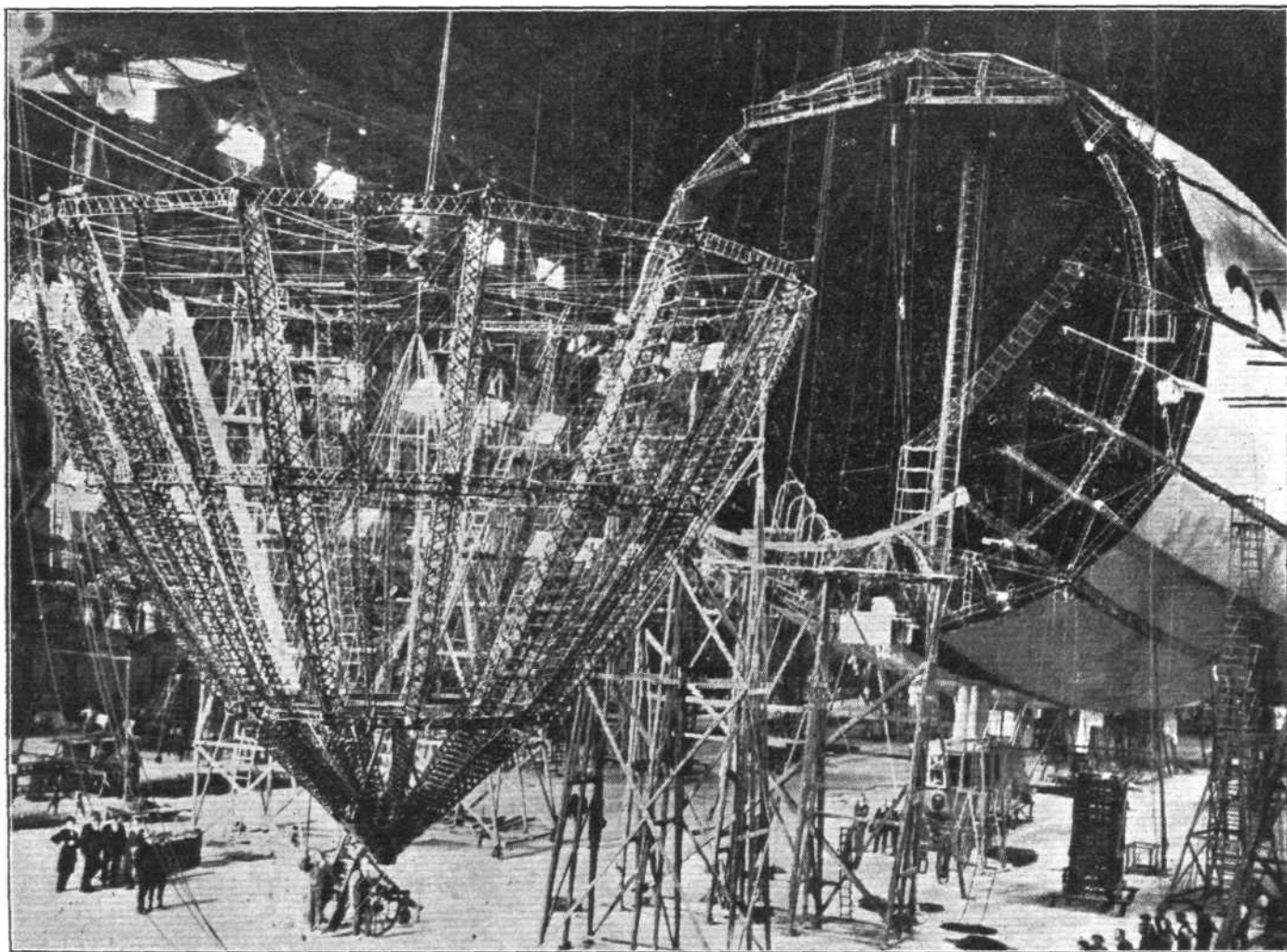
In the previous terms of reference the Committee were instructed to advise on scientific and technical problems relating to the construction and navigation of aircraft. This change, it is pointed out, has been made possible by the re-organisation at the Air Ministry at that establishment,

which formerly dealt with technical development and research and as a further consequence the Air Council has decided that future membership shall be confined solely to members appointed in virtue of their scientific standing, rather than as representatives of definite interests.

### A.R.C. and Aircraft Industry

The report points out that contact between the Committee and the Aircraft Industry will still be maintained by the following arrangements:—(a) Annually, before the programme of research for the ensuing year is decided upon, a joint meeting of the Aeronautical Research Committee and the Industry will take place, at which the carrying out of particular researches during the ensuing year will be freely discussed. After this joint meeting has been held, the Aeronautical Research Committee and the Society of British Aircraft Constructors will forward their respective proposals for research to the Air Council, who will decide upon the programme for the ensuing year. A copy of the decisions will then be forwarded to the Aeronautical Research Committee and the Society of British Aircraft Constructors. (b) Six months after the programme has been decided upon a second joint meeting of the Aeronautical Research Committee and the Society of British Aircraft Constructors will take place, at which the progress of the last six months will be reported and a discussion will ensue. As a result of this second meeting, the Air Council will decide if any modifications of the annual programme are necessary.

The Committee welcomes the grant of £1,500 made available by arrangement with the Air Ministry for the purpose of grants to individual research workers. The amount of this grant exceeded by £500 that allowed in the previous year, in order that funds might be made available for special experiments on light aeroplanes. Grants have also been made for



**NEW NOSE FOR R33 :** A new nose has now been designed and built for the R33 which, it is hoped, will prevent a repetition of the recent accident, in which the airship was torn from the mooring mast and drifted across to Holland, from where, however, she returned under her own power. Our photograph shows the new nose about to be hoisted into place.

work on experimental research on redundant structures, on wind tunnel and theoretical research on skin friction, and on theoretical research on the problem of control at low speeds.

The report states that in addition to the provision of the above grants, some work financed by the Department of Scientific and Industrial Research "has been carried out on elasticity and fatigue at Oxford University" (this is the official wording!), and a programme of investigation on single cylinder internal-combustion units is in hand at the Universities of Cambridge, Durham and Manchester.

The scheme of the Sub-Committees and Panels directing the work in detail is under consideration by the reconstituted Committee. It is stated that during the past year no new problems have been referred to the Meteorology Sub-Committee or to the Fire Prevention Committee, and these Sub-Committees have consequently not met. Under the new terms of reference the Air Inventions Sub-Committee will no longer exist, the work being carried out in its entirety by the Air Inventions Department of the Air Ministry.

Reference is also made in the report to the work of the Airship Co-ordinating and the Structures Sub-Committees.

The Committee point out that the new arrangements to which reference was made last year have resulted in the publications of the Committee being issued more rapidly and brought up to date. Not only are the individual Reports and Memoranda issued within a few weeks of their approval by the Aeronautical Research Committee, but the annual volumes of collected technical papers for past years are now on sale.

**Equipment for Experimental Work.**—The Committee did not make any new proposals this year for increasing the equipment at the National Physical Laboratory, except in connection with certain proposals for a new high-speed tank. It is considered important that approval for the construction of this tank should be given, as with the progress in seaplane development it is imperative that equipment should exist by means of which comparative tests may be carried out at speeds considerably greater than those now possible with the existing equipment at the William Froude Tank, and it is

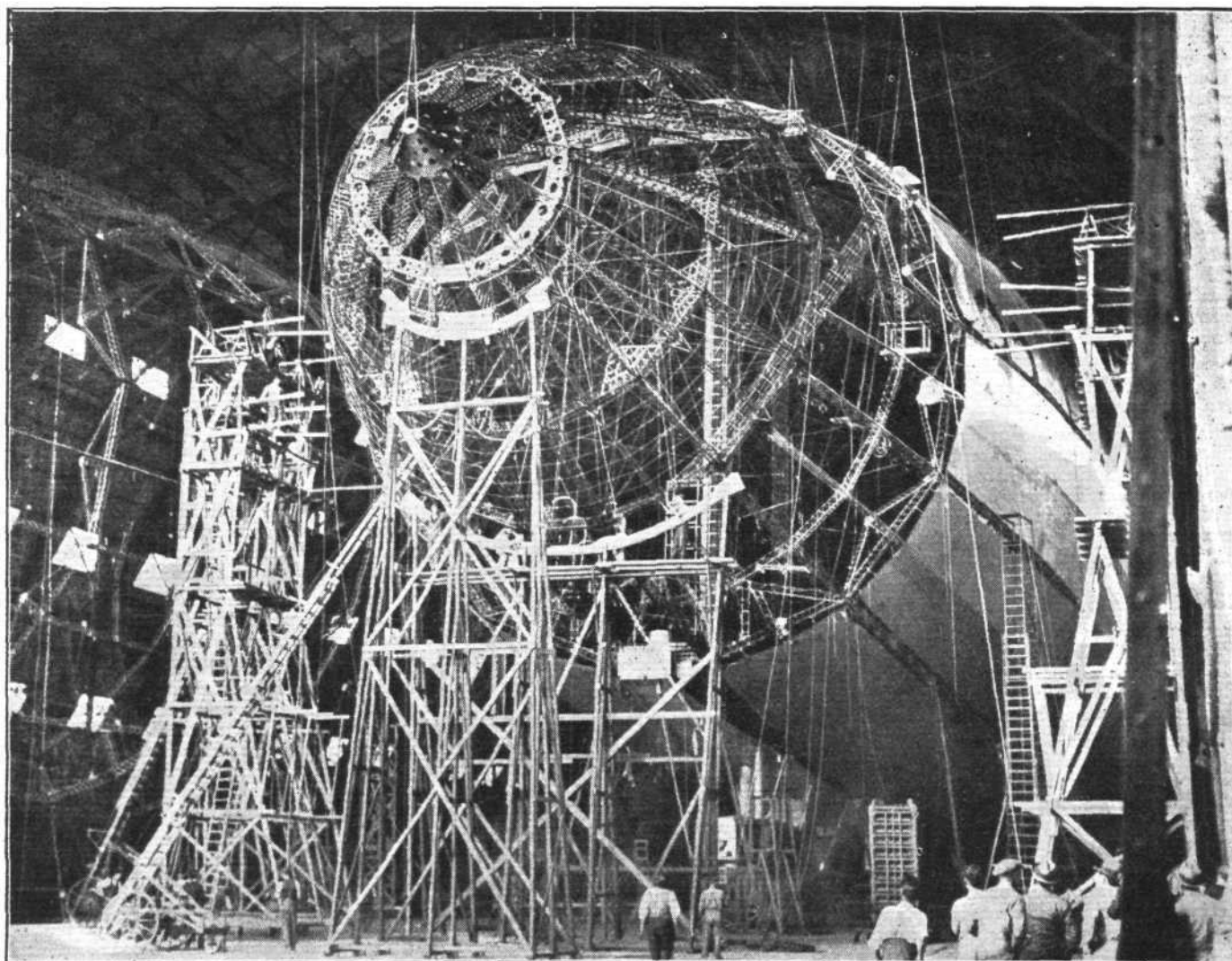
thought that better progress in seaplane development will result therefrom as no means exist at present for making model experiments on a high-speed seaplane.

**Progress of Research.**—The report points out that in two directions a substantial stage in progress has been reached. One of these is the problem of stalled flight, which with the completion of the first flight experiments on the slot-and-aileron control, is now emerging from the pioneer stage. The other promising advance has been made in the course of investigation on elasticity and fatigue.

#### Aerodynamics.

Research upon the control of stalled aeroplanes has gone steadily forward, and the conclusion is formed that conventional aeroplanes when stalled are defective in two respects—they have insufficient rudder power, and the ailerons when applied cause the aeroplane to turn and, by doing so, neutralise their direct effect on roll. It has been found that either an increase of rudder power or the use of an aileron which does not turn the aeroplane would give the pilot power to regain an even keel, and so prevent the fatal spinning dive. Several devices have been tried, the most successful to date being a combination of a Handley Page slot on the leading edge, operated by a simple cam mechanism, in conjunction with a balanced aileron of the Bristol-Frise type. This combination has been fitted to a standard Avro with the result that its control in the stalled state is greatly improved. In particular it is found that the spin, either in its initial stages or when fully developed, can be stopped by the ailerons without using the rudder.

For the purpose of further study of the behaviour of stalled aeroplanes, three special research aeroplanes are being built, and for use with these special aeroplanes, and for other researches on aeroplanes in flight, it is considered essential that an adequate supply of instruments should be forthcoming. Many satisfactory instruments have, it is stated, been developed by the R.A.E., but the report points out that hardly more than one complete set to include every instrument that might be needed has yet been constructed, and the Committee recommend "that the Air Ministry



**IN PLACE :** The new nose of R.33 in position, ready for joining to the main hull. The nose has been re-designed and strengthened and is now believed to be amply strong for any stresses it may have to withstand.

should take steps at once to increase the number of such instruments available, for example, by introducing a procedure whereby all instruments are placed in an instrument maker's hands for development on a production basis as soon as each has passed through the experimental stage."

**Aerofoil Research.**—The Design Panel are continuing their investigation into scale-effect, and two new sections have been chosen, R.A.F. 26 and 31, for further comparative work between model and full scale. A theory of the design of aerofoils has been put forward by the R.A.E., and some six sections have been chosen on this basis with the object of obtaining in the first instance a good thick wing, and, secondly, a good racing wing. "The essential feature of the design," the report states, "was to curve the centre line of a good symmetrical section into a circular arc of suitable camber, and in the case of high camber a cubic curve was also tried for the centre line in order to reduce the movement of the centre of pressure. The theoretical basis has been fully confirmed by the experimental results, and the most promising, R.A.F. 26, having a  $k_L$  max. of 0.460,  $k_D$  min. of 0.0047 and  $(k_L/k_D)$  max. of 22.9, has been chosen for further scale-effect research. Another section of the same series, R.A.F. 31, having a  $k_L$  max. of 0.537,  $k_D$  min. of 0.0060 and  $(k_L/k_D)$  max. of 20.8, will be used in the same connection. R.A.F. 26 is considered to be typical of racing sections and comparable with A.D. 1 and the Sloane sections, whereas R.A.F. 31 is considered to be typical of thick sections in use in present-day design, and has about the same lift and drag characteristics as R.A.F. 15. The aerofoil R.A.F. 25 was designed with a view to having a very low minimum drag, which at an  $lv$  of 33 was found to be 0.0037; the maximum lift coefficient is 0.427, giving a ratio of minimum drag to maximum lift which shows a distinct improvement over R.A.F. 15. The last of the series, R.A.F. 33, has a reflexed trailing edge, and the results compare well with other reflexed wings.

"Attention has been drawn to the importance of knowing the characteristics of thick aerofoils, and the data available have been summarised and published in R. and M. 927. It is of interest to note that low minimum drags are obtainable with certain thick aerofoils, and of special interest in this connection is the German section 420 which has been tested at the N.P.L."

A new method for the measurement of aeroplane performance has been developed by an independent investigator, Capt. G. T. R. Hill, and it is hoped that an improvement in performance analysis will result, since by the use of this method no tests need be made without the air-screw running.

Of increasing importance is the problem of wing flutter, and the report states that this has been discussed with representatives of a number of firms and that a preliminary theoretical attack has been made on the problem, which, it is pointed out, may need a large amount of experimental inquiry before a complete solution is obtained. Information regarding the rigidity of wings is being collected by the Airworthiness Department of the Air Ministry, and a series of accidents associated with flutter is being investigated by the Accident Sub-Committee.

A paragraph in the report states that "The Committee have viewed with interest a film of a flying appliance employing a rotating windmill, and the problems suggested by this new form of heavier-than-air craft are being attacked. Another new matter brought before the committee deals with the aerodynamics of a rotating cylinder, and, in order to ascertain its possible usefulness on an aeroplane, experiments on a large scale and at a high speed are to be made in a wind tunnel."

### Seaplanes

Important model experiments have been made at the National Physical Laboratory to ascertain the effect of moving the maximum beam of a seaplane to various fore and aft positions, and the results have shown that it should be possible to move the position of the maximum beam forward and shape the body aft so as to give a lighter tail and enable the amount of weight carried in the fore part of many seaplanes to be reduced.

The water absorption of seaplane hulls is receiving attention and a lengthy programme of absorption experiments is in hand at the National Physical Laboratory. The programme for next year will include experiments on cleanliness of running, on the efficiency of the fin, on certain amphibian problems, on the scale effect of porpoising, and on the scale effect on small models with a view to ascertaining how small the model may be and yet give satisfactory results.

### Airships

Wind tunnel work is stated to be in progress on airship models in connection with the design of new airships by the

Cardington staff of the Air Ministry and by the Airship Guarantee Company. In view of the re-commencement of airship flying in this country a special Panel was appointed, which reported in 1924, and this report, R. & M. 970, has recently been published.

### Aero Engines

A large number of aero engine problems are under investigation, among which mention may be made of the problem of detonation, which is being steadily attacked, and owing to the urgency of the problem the work on anti-detonation substances is being given preference at the Air Ministry Laboratory. Certain experiments on the Ricardo variable-compression units, following approved programmes of research, are in hand at Cambridge and Durham Universities.

The Engine Sub-Committee are giving considerable attention to problems in connection with increasing the power-weight ratio of engines, particularly at great heights. Pending the development of super-charged engines, the Committee have formed a high opinion of the bi-fuel system submitted by the Bristol Aeroplane Company in conjunction with a high-compression engine, and the report adds that additional efficiency at great heights can be obtained by the employment of a variable valve-timing gear.

On the question of technical officers the following interesting statement is found in the report: "The Committee call attention to the need of officers with more technical knowledge, and to the hope expressed in their last report that it will not be impossible to provide for highly-skilled persons to make a direct technical diagnosis of each power-plant failure immediately it occurs, and to report it in a manner which will enable the Ministry to take measures to prevent recurrence. They consider it desirable to utilise to the full the knowledge of such officers as possess the necessary technical qualifications."

### Air Transport

In a supplement to the report it is stated that the Air Ministry Sub-Committee have met nine times during the past year, and have also visited Croydon in order to become acquainted with the steps taken to ensure reliability of service. It is stated that the main measuring instrument used at present on the air transport service is the revolution recorder on the engine, which provides some information as to whether the engine has run satisfactorily. The Sub-Committee expresses the opinion that recording petrol flowmeters would not only amplify this information, but would indicate any serious waste of petrol.

On the question of engine reliability it has been ascertained that nothing is known of the correct "commercial rating" of an aeroplane engine, and the opinion is expressed that it is possible that the safe interval between overhauls could be varied if the percentage at which the engines are run were altered. For instance, it is considered certain that the life of an engine would be greatly increased if it were normally run at about 70 per cent. of its power. The subject of three-engined aeroplanes has received attention and the report states that it is a matter of arithmetic to show that the reliability of such an aeroplane is greatly increased over the more usual type.

On the subject of landing in fogs it is interesting to find the following statement: "It would appear that the problem of alighting on an aerodrome under all conditions is near solution. By wireless direction, a pilot should find the vicinity of the aerodrome; the leader cable, which is developing satisfactorily, will enable him to determine the exact position of the aerodrome and his height above it, and the Neon lights should be adequate to help him in making the actual landing."

**Economic Flight.**—The last paragraph of the supplement to the report deals with the important question of economic flight, and states that an important investigation has been put in hand in order to ascertain the most economic distribution of structure for a three-engined aeroplane. Other subjects under investigation include the determination of the optimum flight speed for freight-carrying machines, the effect of head wind, and a consideration of the most economic length of stage of various sizes of aeroplanes.

Reference is made to the problem of re-fuelling during flight so as to avoid the necessity for intermediate landings on long stages, and it is stated that experiments carried out at the R.A.E. have shown that the necessary manoeuvre can readily be carried out.

Finally, the question of the use of the sleeve-valve principle in its application to aero engines is briefly referred to.

Copies of the Report of the Aeronautical Research Committee for the year 1924-25 may be obtained from His Majesty's Stationery Office, the price being 1s. 6d. net.

# NEW YORK-CHICAGO NIGHT AIR MAIL SERVICE

REFERENCE has previously been made in *FLIGHT* to the inauguration of the Night Air Mail Service between New York and Chicago—without doubt a most important event in the progress of commercial aviation—and this week we give, through the courtesy of our American contemporary, *Aviation*, some details of the first flights made on this service. On July 1, the first anniversary of the trans-continental service, the Post Office department inaugurated a night air mail service between New York and Chicago. This service had been demanded by the business interests of both cities for a long time, and would have been inaugurated in the through-going trans-continental service had the geographical situation been different. The benefits of this new service are not confined to New York and Chicago, however, as it possesses considerable advantages for outlying cities along the trans-continental route. The departures of the first machines were made the occasion of great public gatherings. In Cleveland the transfer of the mail from one machine to another was made the culminating event of the ceremonies incidental to the opening of the Municipal Air Port. Probably a quarter of a million people turned out to witness the starts or passage of the first machine along different points of the route. At Cleveland, New York, and Chicago extra details of police were required to cope with the huge crowds. Because of an exceptionally heavy mail, caused by a large number of souvenir letters from New Yorkers to relatives and friends in Chicago, two machines were despatched from the Hadley Field; the first machine being sent ahead of scheduled time, leaving the Field at 8.47 p.m., eastern daylight saving time. The regular schedule commenced with the departure of the second machine at 10.30 p.m. The first machine was piloted by D. C. Smith, a veteran of the Cheyenne-Chicago night line of the trans-continental air mail service. It carried three sacks of mail weighing 87 lbs., and was followed two hours later by the second machine, loaded with 36 sacks of mail, weighing well over 250 lbs., and piloted by J. D. Hill. In addition to the large number of sightseers on foot, many aeroplanes turned up at Hadley Field from far and near, including, of course, one of the irrepressible "Jennies," i.e., Curtiss J.N.4, or the American equivalent of the Avro 504. Postmaster New, who assisted in the loading of the mails, stated that while the Government was determined to continue the night air mail service, he felt that it could never be made to pay by solely carrying mail. It must be operated with freight and express to become a paying proposition, and he added that he would like to see private companies carrying the mail under contract to the Government as the railways did.

At least 200,000 people gathered together at or near the Cleveland air port, and all day long the field was crowded with people coming to see the extraordinary variety of aircraft that had arrived on the scene—for it was a "special" day for Cleveland. These machines included the big Douglas and Martin bombers, the big grey Stout monoplanes, the old air mail De Havillands, and about twenty assorted commercial 'planes. Lieut. J. T. Hutchinson, of McCook Field, executed a series of illuminated exhibition flights, until he was signalled to descend and clear the way for the first machine from Chicago.

Chicago's first machine took the air at 7.48, Chicago time, piloted by Shirley J. Short, another veteran of the Air Mail Service, and at 10.30, eastern standard time, less than three hours after taking off at Chicago, the machine was reported as landed at Cleveland. Only 14 minutes elapsed here in transferring the mail from the original 'plane to another, and at 10.44 Pilot P. Collins departed on the second leg to New York. As in the case of New York and Cleveland, the police and special guards had considerable difficulty at Maywood Field in coping with the crowd, which pressed close round the first machine to leave. When the second machine, piloted by Geo. Mayer, departed at 9.40, Chicago time, it was much the same, except that the sun had set and that the field was flooded by lights. Many of the crowd still remained to see the second machine take off.

The schedule of the trans-Continental route was based on a combination of geographical and weather conditions, comprising prevalent fogs at both ends of the route, the two coastal mountain ranges, and the flat level country in between, ideal for night flying. Groping the way, with no facilities for guidance, it was inconceivable that the mountainous sections could be chosen as the scene for the first experiments in night flying. Of necessity, therefore, the amount of available mail traffic became a matter of secondary consideration. Yet while actual problems of operating night and day between New

York and Chicago were still unsolved, Col. Henderson began preparations for the New York-Chicago night air route. The pilot on this route is now secure in the knowledge that what appears to be a wall of darkness before him has been rendered comparatively safe by a series of 150 beacons scattered along the 754 miles to Chicago. The field he had just left remains brilliantly illuminated; the hangars, towers, wind cones, etc., are all flood lighted. On the top of the large hangar, some 50 ft. from the ground, is a huge 5,000,000 candle-power electric beacon set about 1 degree above the horizon and making a complete circuit six times a minute. Some 12 to 18 miles westward another beacon of similar magnitude sends intermittent flashes to the pilot and conveys to him the satisfactory information that an emergency landing field outlined by the boundary light is awaiting him in the event of trouble. For 80 miles he continues his way westward before he encounters the blue ridge mountains at New Tripoli. For the next 30 miles he is in the midst of what has been declared to be the most dangerous flying country in the world. The mountains, though not more than 2,600 ft. high, are almost without exception heavily timbered. Their conformation is such that even where there is no timber the open spaces so frequently found in the Rockies are practically non-existent. In this 30 miles stretch from New Tripoli to Ringtown, the Air Mail Service has laid out five emergency landing fields, each of which has a 5,000,000 candle-power beacon with route beacons in between, guiding the pilot on his course.

The following list gives the emergency landing fields, and the in-between lights of the airway from New York to Cleveland. The in-between lights are given in italics.

(1) Hadley Field, New Brunswick, N.J. (2) *Somerville Light, Somerville, N.J.* (3) *Whitehouse, N.J.* (4) *Cushtunk Mountain Light, Annandale, N.J.* (5) *Musconetong Mountain Light, West Portal, N.J.* (6) *Stewartsville, N.J.* (7) *Farmersville Light, Easton, Pa.* (8) Northampton, Pa. (9) *Schnecksville Light, Catasauqua, Pa.* (10) Jordan, Pa. (11) *Blue Ridge Light, New Tripoli, Pa.* (12) Andreas, Pa. (13) *Mauch Chunk Ridge Light, Tunaqua, Pa.* (14) Hometown, Pa. (15) Park Palace, Pa. (16) Ringtown, Pa. (17) Ring Mountain Field, Ringtown, Pa. (18) Numida, Pa. (Semi-Terminal.) (19) *Catawissa Light, Catawissa, Pa.* (20) Elysburg, Pa. (21) *Snyderstown Light, Snyderstown, Pa.* (22) Sunbury, Pa. (23) *New Berlin Light, Mifflinburg, Pa.* (24) Hartleton, Pa. (25) *Laurelton Light, Millmont, Pa.* (26) Woodward, Pa. (27) *Millheim Light, Center Hall, Pa.* (28) Bellefonte, Pa. (Operating Field.) (29) *Alleghany Mountain Light, Wingate, Pa.* (30) Snowshoe, Pa. (31) *Moshannon Mountain Light, Winburne, Pa.* (32) Kylertown, Pa. (33) *Bigler Light, Bigler, Pa.* (34) Clearfield, Pa. (35) Greenwood Club Field. (36) Rockton, Pa. (37) (Not selected.) (38) Dubois, Pa. (39) *Reynoldsville Light, Reynoldsville, Pa.* (40) Brookville, Pa. (41) *Corsion Light, Brookville, Pa.* (42) Clarion, Pa. (Semi-Terminal.) (43) *Shippensville Light, Shippensville, Pa.* (44) Lamartine, Pa. (45) *Pittsville Light, Rockland, Pa.* (46) Kennerdell, Pa. (47) Wesley, Pa. (48) Mercer, Pa. (49) *Clarksville Light, Franklin, Pa.* (50) Hartford, Ohio. (51) *Cortland Light, Cortland, Ohio.* (52) Parkman, Ohio. (53) *Auburn Center Light, Solon, Ohio.* (54) Solon, Ohio. (55) *Garfield Heights Light, Cleveland, Ohio.* (56) Cleveland, Ohio. (Terminal Field.)

Between New York and Cleveland, which embraces all the mountainous territory on the route, are thirty-two landing fields which serve as havens of refuge. In between, on thirty to forty foot towers, are route beacons consisting of four headlights similar to those used on Ford cars (good old Ford!), one adjusted to cast a beam of light half a degree above the horizon, one at 1 degree, another at  $1\frac{1}{2}$  degrees and the fourth at 2 degrees. This cluster of lamps, which revolves six times a minute, is surmounted by a stationary red light to indicate to the pilot that the light is a route beacon and not an emergency field light. No matter at what altitude the pilot is flying, if visibility is at all possible, he will come within range of one of the head-lights as a result of variation in beam angle.

The five main fields on the route, i.e., Hadley, Belfonte, Cleveland, Bryan, and Maywood Field at Chicago, are equipped with wireless stations, and all machines of the Air Mail Service are despatched in and out by wireless. Each emergency field is connected by direct telephone wire with the nearest terminal field, so that should it become necessary to warn a pilot or call him down, he will be signalled by a simple

code system of flares. For instance, one brilliant red magnesium flare means: "Bad weather ahead; exercise caution," and two such flares constitute an imperative order to the pilot to alight and wait for further instructions.

One of the most interesting, as well as important, features of the equipment for night flying is the half-billion candle-power electric arc flood lights with which the five major flying fields are equipped. So powerful is this light that the landscape for nearly a mile round in a complete half circle is made as bright as day, and a newspaper may be read with ease

at three-quarters of a mile away; yet the rays at no point extend more than 15 ft. above the ground, and there is no blinding flare to confuse the incoming pilots and prevent them making a safe landing.

As they fly Westward over the lighted airway the machines carry sufficient fuel, oil and water to take them to Belfonte, where they are completely serviced. At Cleveland another pilot and machine continue the journey Westward, he, in turn, stopping at Bryan, Ohio, for fuel. Eastward the process is reversed.

## SWEDISH SEAPLANE VISIT TO ENGLAND

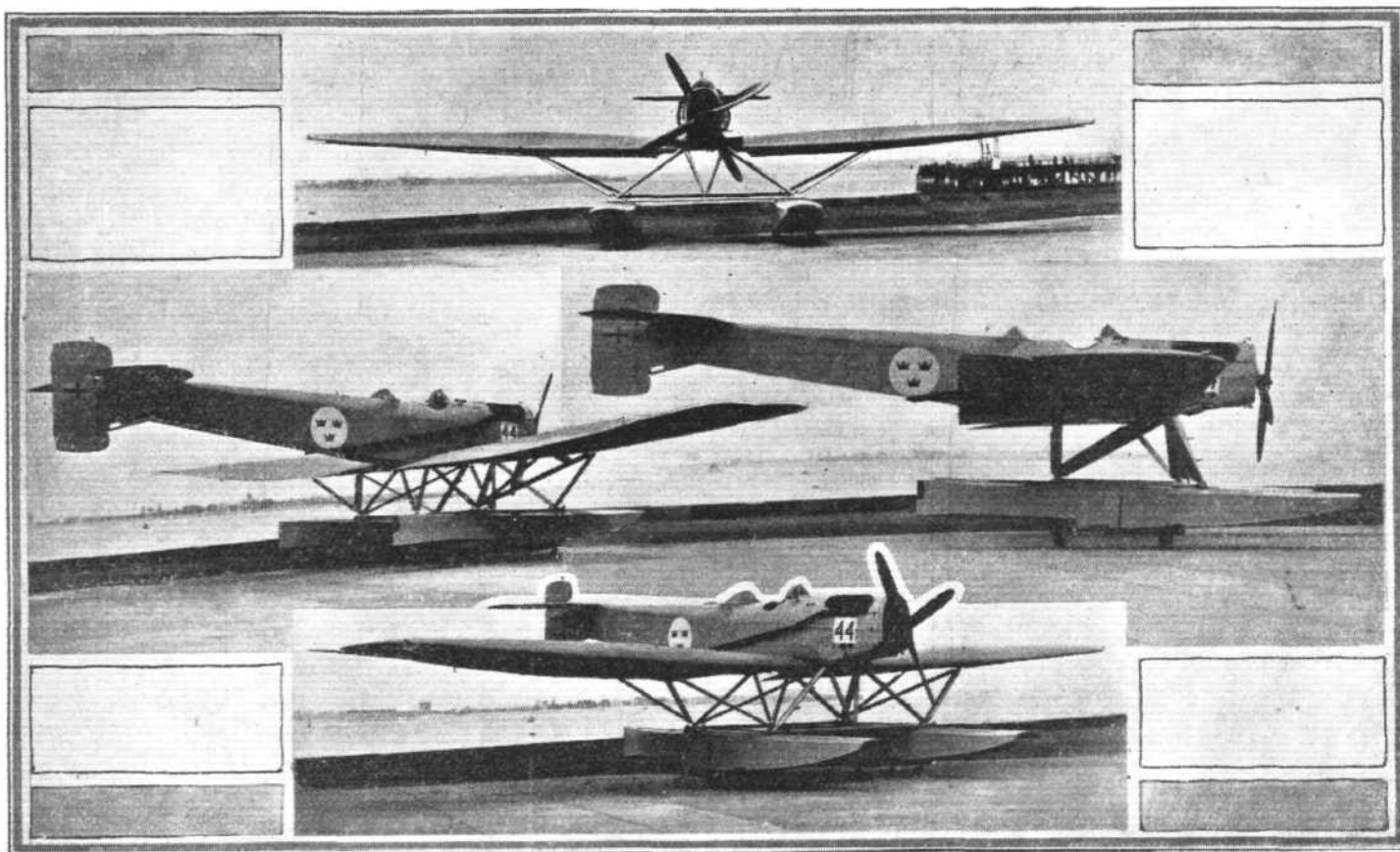
### Fine Flight Made With Rolls-Royce Engine

IN our issue of March 19, 1925, we described and illustrated a twin-float seaplane designed by the German designer, Ernst Heinkel, and built under licence in Sweden by the Svenska Aero Aktie Bolaget, of Stockholm. One of these machines, fitted with a Rolls-Royce "Eagle IX" engine, recently paid a visit to this country, during which some very good performances were put up.

The Swedish seaplane, known as the "S.II," was piloted by Commander Flory, who carried as passenger Admiral

they had covered a distance of 3,100 miles without trouble of any kind. Commander Flory in a letter to the Rolls-Royce Company, states that "the engine ran like a clock." That, of course, is merely equivalent to saying that it "ran like a Rolls."

Although the "S.II" is a service machine, and thus not quite comparable with a commercial seaplane, the flight did demonstrate the possibility of establishing regular direct air services between London and the Scandinavian countries,



**A SWEDISH VISITOR:** These four photographs show the Swedish seaplane with Rolls-Royce "Eagle" IX engine, on which Commander Flory flew from Stockholm to Felixstowe and back. On the return journey the flight from Felixstowe to Malmö was made, non-stop, in 7 hrs. 15 mins.

Limnberg, of the Royal Swedish Navy. The outward journey was made from Stockholm via Karlskrona-Malmö-Texel to Felixstowe, but no attempt was made to cover very long stages. After a stay in this country the return journey to Sweden was undertaken, and it is worthy of note that the trip from Felixstowe to Malmö was made without landing, and in a time of 7 hours 15 minutes.

After leaving Malmö the rest of the return journey to Stockholm was made via Gothenburg and Karlskrona, and by the time the aerial travellers had reached Stockholm

and the fact that the trip from Felixstowe was made in the astonishingly short period of 7½ hours indicates the enormous saving in time that could be effected. The journey by train and boat from London to Malmö occupies something like 38 to 40 hours. For a beginning large seaplanes would not be required, and machines no larger, or but little larger, than the "S.II" could be used for the conveyance of mails, which would be delivered considerably earlier than is now possible. Even the somewhat roundabout route over Amsterdam and Hamburg does not save as much time as it is possible to save.

#### Air Escort for the Prince

WHEN H.R.H. the Prince of Wales paid a visit to La Plata from Buenos Aires on August 19, travelling in the Argentine President's sumptuous coach, he was escorted by five aeroplanes, the pilots of which gave skilful exhibitions of low flying throughout the journey.

#### Danish Fishery Inspection from the Air

At Frederikshavn, Jutland, experiments have been proceeding in the use of naval hydroplanes for fishery inspection purposes. The idea has proved thoroughly practical, and it has been possible to exercise very satisfactory control over the territorial waters.

# THE ROYAL AIR FORCE

London Gazette, August 18, 1925

## General Duties Branch

The following are granted temp. commissions as Flying Officers on attachment for four years' duty with the R.A.F. (Aug. 10):—*Lieutenants* R.N., J. H. I. Wood, H. R. M. Nicholl, P. W. W. Wootton, H. F. Baker, N. R. Courthope-Munroe, J. W. Hawkins, R. F. B. Cecil. *Sub-Lieutenants*, R.N.—C. R. V. Pugh, A. Brock, E. I. E. Burt, C. John, A. N. Waring. *Lieutenant*, R.M.—R. W. Gordon.

The following Pilot Officers are promoted to rank of Flying Officer:—W. C. Ward (June 19); E. R. H. Coombes (July 10); C. F. Steventon (July 14); C. R. Hancock, J. H. Powle, C. H. Tighe, A. H. Wheeler (July 17).

The following Pilot Officers on probation are confirmed in rank (July 17):—R. D. Adams, E. Addis, C. A. Bell, R. L. Burnett, J. G. Chamberlain, S. A. V. Evans, D. S. Green, A. J. Holmes, N. K. Howard, F. M. Kellaway, J. C. Noel, L. F. T. Price, J. H. C. Purvis, D. C. Shaw, C. P. Vines, L. A. Walsh.

Squadron Leader A. Levick, O.B.E., is placed on the retired list and is granted rank of Wing Commander (Aug. 15): *Flight-Lieut.* P. W. S. Bulman, M.C., A.F.C., resigns his permanent commission (Aug. 19).

The following relinquish their temp. commission on return to Army duty:—*Flight-Lieut.* C. H. Goring, D.S.O., M.C. (*Lieut.*, R. Fus.) (July 13). *Wing Commander* C. Fraser, C.M.G., O.B.E., M.C. (*Maj.*, N. Staffs. Regt.) (Aug. 1). *Flight-Lieutenants*.—R. Gambier-Parry (*Capt.*, R. Welch Fus.); W. Hodgson, O.B.E. (*Lieut.*, D. of Wellington's Regt.) (Aug. 1). *Flying or Observer Officers* (*Hon. Flight-Lieuts.*).—J. E. Catherall, M.B.E. (*Capt.*, R. Warwick Regt.); W. E. (Brabazon) Dowling (*Capt.*, E. Lancs. Regt.); J. P. Walters (*Capt.*, D.C.L.I.) (Aug. 1). *Observer Officer*.—C. C. Abraham (*Lieut.*, K. Shrops. L.I.) (Aug. 1).

## Stores Branch

The following are granted short service commissions as Pilot Officers on probation for five years on the Active List, with effect from and with seniority of

Aug. 10:—E. H. Broad, L. F. Caunter, E. G. M. Charleson, R. H. Clay, J. Cuming, D. J. Divett, G. H. Doveton (*Lieut.*, Indian Army, ret'd.), F. W. Felgate, E. J. Fishenden, C. P. Marshall, P. J. Mote, P. P. S. Rickard, L. Taylor, J. E. Welman.

The following are transferred on probation to Stores Branch from General Duties Branch, with effect from and with seniority of Aug. 10:—*Flying Officers*.—H. O. Fellowes (from *Flight-Lieut.*), W. Bourne. *Pilot Officer*.—A. J. Walker.

## Accountant Branch

The following are granted permanent commissions as Pilot Officers on probation, with effect from and with seniority of Aug. 10:—F. Rigby, T. P. E. Campbell, R. J. Wishlade, J. O. Morrison.

## Medical Branch

*Flight-Lieut.* D. G. Boddie, M.B., is promoted to rank of Squadron Leader (Aug. 19). *Flight-Lieut.* G. M. Mellor relinquishes his temp. commn. on ceasing to be employed and is permitted to retain his rank (Aug. 1). *Capt.* A. B. H. Cole, Army Dental Corps, is granted a temp. commn. as a *Flight-Lieut.* on attachment to R.A.F. for a period of four years (Aug. 1). He will continue to receive emoluments from Army funds. *Flight-Lieut.* J. Wren (*Capt.*, Army Dental Corps) relinquishes his temp. commn. on return to Army duty (Aug. 1).

## Reserve of Air Force Officers

*Flight-Lieut.* P. W. S. Bulman, M.C., A.F.C., is granted a commn. in Class A., General Duties Branch, in rank stated (Aug. 19). *Pilot Officer* C. E. Baldwin is confirmed in rank (Aug. 17). *Flying Officer* F. J. H. Ayscough is transferred from Class A. to Class C. (Aug. 8).

## Memorandum

Second *Lieut.* G. H. Shackelford is deprived of his honorary commission on conviction by the Civil Power (Feb. 16, 1922).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

*Air Commodore*: I. M. Bonham-Carter, C.B., O.B.E., to No. 3 Group H.Q., Spittlegate, to command; 1.10.25.

*Group Captain*: A. W. Bigsworth, C.M.G., D.S.O., A.F.C., to R.A.F. Training Base, Leuchars, pending taking over command on transfer to Home Estab.; 5.8.25.

*Wing Commander*: N. Goldsmith, O.B.E., to No. 3 Group H.Q., Spittlegate, for tech. staff duties; 10.8.25.

*Squadron Leader*: W. A. Coryton, M.V.O., D.F.C., to No. 24 Sqn., Kenley; 17.8.25.

*Flight Lieutenants*: F. O. Soden, D.F.C., to Inland Area Communication Flight, Northolt; 19.8.25. A. R. Jones, to Experimental Section, R.A.E., S. Farnborough; 17.8.25. G. G. Dawson, to No. 39 Sqn., Spittlegate; 19.8.25. F. W. Trott, O.B.E., M.C., to Central Flying Sch., Upavon; 24.8.25.

*Flying Officers*: I. A. Bertram, to No. 4 Sqn., S. Farnborough; 17.8.25. G. I. C. Peacocke, E. C. de V. Lart and R. Melbourne, to No. 207 Sqn., Eastchurch; 17.8.25. J. J. Nolan, to No. 16 Sqn., Old Sarum; 17.8.25. A. W. Rowbotham, to No. 39 Sqn., Spittlegate; 17.8.25. J. Silvester and E. C. Dearth, to Central Flying Sch., Upavon; 24.8.25. H. E. King and W. J. Pearson, to Cadet College, Cranwell; 24.8.25. H. Ford, D.F.C. to No. 19 Sqn., Duxford; 24.8.25. M. J. Du Cray, to No. 5 Flying Training Sch., Sealand; 24.8.25. W. D. Gairdner, D.F.C. and A. Leslie-Moore, to R.A.F. Base, Gosport; 5.8.25. A. A. B. Chipper, to No. 405 Flight, Leuchars; 5.8.25. (*Hon. Flight-Lieut.*) C. M. E. Gifford, to Armament and Gunnery Sch., Eastchurch; 7.8.25. F. P. Adams, to R.A.F. Depot, on transfer to Home Estab.; 4.8.25. G. Horsfield, to remain at No. 55 Sqn., Iraq, instead of to R.A.F. Depot, as previously notified. F. E. Vernon, to Inland Area Aircraft Depot, Henlow; 5.8.25. C. McL. Reid, to R.A.F. Depot, on transfer to Home Estab.; 5.8.25. A. K. Bamber, to Experi-

mental Section, R.A.E., S. Farnborough; 24.8.25. E. G. Whinney, to Sch. of Physical Training, Uxbridge; 1.9.25.

*Pilot Officers*: F. E. R. Dixon, to No. 60 Sqn., India; 21.7.25. V. W. Soltan, to No. 60 Sqn., India; 21.7.25. E. G. Rosling, to R.A.F. Depot; 4.11.24. V. B. Bingham-Hall, M.C., and D. W. Trotter, to No. 4 Sqn., S. Farnborough; 17.8.25. A. O. Pollard, V.C., M.C., D.C.M., R. G. M. Hill, F. C. Rowland and J. W. Vanderbeek, to No. 13 Sqn., Andover; 17.8.25. E. C. G. Badcock, to No. 207 Sqn., Eastchurch; 17.8.25. G. B. Collet, to No. 2 Sqn., Manston; 17.8.25. E. B. C. Groner and C. W. Switzer, to No. 9 Sqn., Manston; 17.8.25. L. R. Mizen, to No. 100 Sqn., Spittlegate; 17.8.25. W. F. Rimmer, to No. 11 Sqn., Netheravon; 17.8.25. G. A. Whitehead, to No. 39 Sqn., Spittlegate; 17.8.25. H. C. Macphail, to No. 12 Sqn., Andover; 17.8.25. L. Dalton-Morris, J. A. C. Florence, A. H. Frost, J. S. Georgeson, G. D. Harvey and R. J. Stevens, to R.A.F. Base, Gosport; 17.8.25. E. A. C. Bushell, to No. 19 Sqn., Duxford; 24.8.25. J. A. Ballantyne, to No. 2 Sqn., Manston; 24.8.25. N. S. Little, to No. 5 Flying Training Sch., Sealand; 12.9.25.

### Accountant Branch

*Pilot Officers*: T. P. E. Campbell, J. O. Morrison, F. Rigby and R. J. Wishlade, to Sch. of Tech. Training (Men), Manston, on appointment to Permanent Commissions (on probation); 10.8.25.

### Medical Branch

*Squadron Leader*: T. C. St. C. Morton, M.D., D.T.M. & H., to Inland Area Aircraft Depot, Henlow; 24.8.25.

*Flying Officers*: J. Parry-Evans, to Sch. of Tech. Training (Men), Manston; 26.8.25. D. B. Smith, M.B., to No. 1 Flying Training Sch., Netheravon; 14.8.25.

### NAVAL APPOINTMENT

The following appointment was made by the Admiralty on August 22:—

### ROYAL AIR FORCE

*Flight-Lieut.*: E. H. Bryant, to No. 440 Flight, in command.

## Air Express Co., Ltd.

THE Air Express Co., Ltd., of Croydon Aerodrome, a private company recently formed by H. R. Trost and A. H. Trost with the object of specialising as an air transport agency, inform us that they have been appointed British managing agents for passenger and goods traffic on the important and extensive systems of air lines of Junkers-Luftverkehr A.G., Berlin; Nederlandsche Wereld Verkeer Maatschappij, Amsterdam; and Europe-Union, Berlin, with which latter are also associated Aero O.Y., Helsingfors; Oesterreichische Luftverkehrsgesellschaft A.G., Vienna; Ad Astra Aero A.G., Zuerich; Dansk Lufttransport A.S., Copenhagen; Aeronaut A.S., Reval; Lettlaendische Luftverkehrs A.G., Riga; and Danziger Luftpost G.m.b.H., Danzig.

An arrangement has been made with Messrs. Imperial Airways, Ltd., in accordance with which the Imperial service between London and Amsterdam will be flown on and from August 10 last with a large aeroplane (except Sundays) in each direction, connecting at Amsterdam with services of the Aerotransport Company running from Amsterdam via Hamburg to Denmark and Sweden, with connections to Norway and Finland; also connecting at Amsterdam with the services of the Nederlandsche Wereldverkeer Maatschappij to Essen and Berlin, with connections at these places with the Europe Union system to Switzerland, Austria, Hungary, Germany, Sweden, Denmark, Danzig, Poland, Esthonia, Latvia, Lithuania, and Finland.

Thus some thirty important European cities are being connected by air lines with London. Travellers and goods can be booked through by air to such well-known centres as Helsingfors, Reval, Riga, Memel, Koenigsberg, Danzig, Breslau, Budapest, Vienna, Munich, Geneva, Frankfurt, Leipzig, Dresden, Berlin, etc., etc.

Tickets and information may be obtained from Imperial Airways, Ltd., Air Express Co., Ltd., Thos. Cook and Son, Ltd., and the leading tourist and freight agents.

## South Coast Newspaper Deliveries by Aeroplane

THE advantage of commercial transport by air over the ordinary road or railway service is expounded in a very practical manner by the service inaugurated by the *Evening Standard* on August 2. "In order to meet the demands of the enormous holiday crowds on the South Coast, and to overcome the difficulties caused by necessary train delays," this journal contracted with Imperial Airways, Ltd., for the distribution of many thousands of papers along the coast. A D.H. 50 from Croydon aerodrome, proceeding to Lympne, dropped its huge consignment of papers before reaching Maston, and these were delivered by special fast motor cars to Folkestone, Deal, Dover, Margate, Ramsgate and Canterbury.

A second aeroplane, a Vickers Vulcan, dropped papers at Bournemouth, and cars distributed these throughout Hampshire and the holiday resorts of Dorset.

## AIR POST STAMPS

### By DOUGLAS B. ARMSTRONG

#### Another Catalogue

HARD upon the heels of the first English catalogue of the World's Air Posts (recently noticed in *FLIGHT*) comes the fourth edition of *Champions' Catalogue Historique et Descriptif des Timbres de la Poste Aérienne*, 1925 (Prix 25 fr.), hitherto the only one of its kind. The present edition is a bulky volume, due to the fact that the very ample descriptive notes are rendered in both French and English. Not only the prices have been revised, but much additional information embodied in the text. The former show some sensational advances, even at 85 fr. to the pound. The only serious fault we have to find is the method of dividing the work into three watertight compartments devoted respectively to official and semi-official air stamps, and cachets. This is a decided hindrance to ready reference and destroys moreover the chronological order of the flights. Apart from this small defect, however, it is an invaluable work of reference for aero-philatelists, and the chapter dealing with the Balloon Posts of the Sieges of Paris and Metz is admirable.

#### America-Bermuda Air Mails

SOMETHING like 2,000 letters were carried by the dirigible "Los Angeles" (late Z.R.3) when on her maiden trip from Lakehurst to Bermuda on February 20. As no landing could be made they were dropped by parachute, receiving the Hamilton (Bermuda) post-mark of the next day, February 21.

Three bags of air mail were brought from Bermuda, however, on the return journey of the second trial trip, the letters showing in addition to the Hamilton postmark of April 16, a two-line cachet in black, inscribed "BERMUDA FIRST OVERSEAS AIR MAIL." A small mail was also carried by the "Los Angeles" to Porto Rico on May 3, and another brought back on the return flight. Flown covers were impressed with a four line cachet in green, reading "By airship 'Los Angeles' from Port Rico to Lakehurst." The postmarks are, San Juan P.R., May 6th and New York (City Hall), May 11th.

#### Warsaw—Danzig

AERIAL propaganda stamps issued by the Polish League of Aerial Defence (Liga Obrony Powietrznej Panstwa) were used in connection with the opening of a Warsaw-Danzig air post service on March 10, 1925. Of various values and colours, they represent a direct contribution to a fund for providing a Polish air fleet. One type consists merely of a winged propeller device in a small square frame, but a later issue has an upright rectangular vignette of an aeroplane flying over Warsaw. Both designs incorporate the significant initials of the League "L.O.P.P."

#### New York-Chicago Night Flights

A SMALL amount of mail matter was carried on the experimental night flights between Bellefont and Bryan (Ohio) and Lakehurst, N.J., prior to the establishment of the regular night mail service on July 1. Such letters bore the impression of a special cachet encircling the words "Test Flight." A special cancellation was also applied to letters carried from New York to Chicago on the initial night-flight, but the description has not yet been received.

#### Amundsen Flight Cards

THE special mail carried by Amundsen on his ill-fated trans-Polar flight, consisting of some thousands of souvenir cards, was salvaged in its entirety, and is now being distributed through the Norwegian post office. The cards, which have already been described in this column, bear, in addition to the impressed private stamp of the expedition, ordinary postage and air post stamps of Norway, postmarked at King's Bay, Spitzbergen (where the expedition had its headquarters), on June 18, 1925.

Air post collectors will be eager to add to their collections these interesting relics of a splendid failure.

#### The Institute of Metals

THE programme of the annual autumn meeting of the Institute of Metals, which has just been issued, is an attractive one. Held in Glasgow, the meeting begins on September 1 with a lecture by Sir John Dewrance, K.B.E., on "Education, Research and Standardisation." The mornings of September 2 and 3 will be devoted to the reading and discussion of no fewer than sixteen papers dealing with many differing aspects of metallurgical work. In the afternoons, visits will be paid to works in the Glasgow district and in the evening of September 2, a reception is to be given by the Lord Provost and Corporation of Glasgow. The concluding day of the meeting, September 4, is set apart for a visit to the Trossachs

and Loch Lomond. A copy of the programme, giving full details of the arrangements and of a membership election to be completed in time for the meeting, can be obtained on application to the Secretary, Mr. G. Shaw Scott, M.Sc., 36, Victoria Street, London, S.W.1.

#### Cellon at Lympe

CELLON (RICHMOND), LTD., never, it seems, misses an important aviation meeting, and at the recent Lympe August Meeting the following machines were "doped with Cellon":—Cranwell light aeroplane (winner of the single-seater Light Aeroplane scratch speed race), Bristol, Hawker and Parnall Pixie.

#### The Royal Air Force Memorial Fund

THE usual fortnightly meeting of the Grants Sub-Committee was held at No. 7, Iddesleigh House, on August 20. Lieut.-Commander H. E. Perrin was in the chair, and the other Members of the Committee present were Mr. W. S. Field and Squadron-Leader E. B. Beauman. The Committee considered in all 17 cases, and made grants to the amount of £101 10s. 5d. The next meeting was fixed for September 3.

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#### PUBLICATIONS RECEIVED

*Aeronautical Research Committee, Reports and Memoranda: No. 936 (Ae. 157).*—A Continuous Rotation Balance for the Measurement of Pitching and Yawing Moments due to Angular Velocity of Roll. By T. Lavender. February, 1925. Price 6d. net. *No. 950.*—Reports and Memoranda of the Aeronautical Research Committee published between April 1, 1923, and December 31, 1924. April, 1925. Price 4d. net. *No. 966 (Ae. 182).*—Full-Scale Tests of Different Ailerons on Bristol Fighter Aeroplane. By H. M. Garner and E. T. Jones. January, 1925. Price 6d. net. H.M. Stationery Office, Kingsway, London, W.C.2.

*Department of Overseas Trade: Report on the Industries and Commerce of Spain, March, 1925.* By Capt. U. de B. Charles. London: H.M. Stationery Office, Kingsway, W.C. Price 2s. 6d. net.

*Technologic Papers of the Bureau of Standards: No. 234.*—A Study of the Seasonal Variation of Radio-Frequency Phase Difference of Laminated Phenolic Insulating Materials. By J. L. Preston and E. L. Hall. April 10, 1925. U.S. Government Printing Office, Washington, D.C., U.S.A. Price 5 cents.

#### Catalogue

*Metal Propellers for Aircraft.* Metal Propellers, Ltd., Purley Way, Croydon, Surrey.

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#### AERONAUTICAL PATENT SPECIFICATIONS

*Abbreviations:* Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

#### APPLIED FOR IN 1924

Published August 27, 1925

- 10,401. D. J. MOONEY. Aircraft. (237,644.)  
10,580. C. A. WRAGG. Planes and control surfaces. (216,115.)  
16,980. W. SWIATECKI. Devices for dropping bombs, etc., from aircraft. (237,718.)  
22,954. J. TUSCHER. Airplanes. (237,760.)  
26,573. DORNIER METALLBAUTEN GES. and C. DORNIER. Metal propellers. (224,883.)  
30,701. F. P. CANOVA. Screw propellers. (226,569.)

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